

We claim:

Sub. A, 52/418
1. An activated carbon composition comprised of an activated carbon and a carboxylic acid containing compound.

Sub. B,
2. The activated carbon composition as claimed in claim 1 further comprising water.

3. The activated carbon composition as claimed in claim 1 wherein the carboxylic acid containing compound is present in an amount of from 0.01 to 5 percent by weight.

Sub. A2
4. The activated carbon composition as claimed in claim 1 wherein the carboxylic acid containing compound is present in an amount of from 0.01 to 5 percent by weight and water is present in an amount of from 20 to 60 percent by weight.

5. The activated carbon composition as claimed in claim 1 wherein the carboxylic acid containing compound is present in an amount of from 0.01 to 5 percent by weight and water is present in an amount of from 0 to 20 percent by weight.

6. The activated carbon composition as claimed in claim 1 wherein the activated carbon is derived from one or more selected from the group consisting of coal, such as bituminous, anthracite and lignite; wood; peat; coconut shells; and synthetic polymers.

7. The activated carbon composition as claimed in claim 1 wherein the carboxylic acid containing compound is a hydroxy carboxylic acid.

8. The activated carbon composition as claimed in claim 7 wherein the hydroxy carboxylic acid is one or more selected from the group consisting of citric acid, ascorbic acid, erythorbic acid, glycolic acid, lactic acid, salicylic acid, hydroxybutyric acid, hydroxyvaleric acid, and their corresponding ammonium, sodium and potassium salts.

Def A2 cns

9. The activated carbon composition as claimed in claim 1 wherein the carboxylic acid containing compound is one or more carboxylic acid containing compounds useful as one or more selected from the group consisting of sequestering agents, buffers, base neutralizers, antioxidants, and reducing agents.

Sequestering Agents

10. A method for preparing an activated carbon composition comprising the step of immersing an activated carbon in an aqueous solution of a carboxylic acid containing compound.

11. The method for preparing an activated carbon composition of claim 10 wherein the carboxylic acid containing compound is adsorbed onto the surface of the activated carbon.

12. The method for preparing an activated carbon composition of claim 10 wherein the concentration of the carboxylic acid containing compound in the aqueous solution is an amount sufficient to allow a preferred amount of the carboxylic acid containing compound to be adsorbed onto the surface of the activated carbon.

13. The method for preparing an activated carbon composition of claim 12 wherein the concentration of the carboxylic acid containing compound is from 0.01 to 10 percent by weight.

14. The method for preparing an activated carbon composition of claim 10 wherein the activated carbon is immersed in the aqueous solution of a carboxylic acid containing compound for a period of time sufficient to allow a preferred amount of the carboxylic acid containing compound to be adsorbed onto the surface of the activated carbon.

Def A3

15. The method for preparing an activated carbon composition of claim 14 wherein the activated carbon is immersed for from 0.5 to 48 hours.

16. The method for preparing an activated carbon composition of claim 10 further comprising the step of drying the activated carbon composition at from 20 to 250 °C for from 0.5 minutes to 12 hours.

17. A method for purifying aqueous solutions comprising the step of contacting an aqueous solution with an activated carbon composition comprised of an activated carbon and a carboxylic acid containing compound.

18. The method for purifying aqueous solutions of claim 17 wherein the carboxylic acid containing compound is present in the activated carbon composition in an amount of from 0.01 to 5 percent by weight.

19. The method for purifying aqueous solutions of claim 17 wherein the activated carbon is derived from one or more selected from the group consisting of coal, such as bituminous, anthracite and lignite; wood; peat; coconut shells; and synthetic polymers.

20. The method for purifying aqueous solutions of claim 17 wherein the carboxylic acid containing compound is a hydroxy carboxylic acid.

21. The method for purifying aqueous solutions of claim 20 wherein the hydroxy carboxylic acid is one or more selected from the group consisting of citric acid, ascorbic acid, erythorbic acid, glycolic acid, lactic acid, salicylic acid, hydroxybutyric acid, hydroxyvaleric acid, and their corresponding ammonium, sodium and potassium salts.

22. The method for purifying aqueous solutions of claim 17 wherein the carboxylic acid containing compound is one or more carboxylic acid containing compounds useful as one or more selected from the group consisting of sequestering agents, buffers, base neutralizers, antioxidants, and reducing agents.

Int. A3 cont.

23. A method for purifying aqueous solutions comprising the steps of: providing a bed of an activated carbon composition comprised of an activated carbon and a carboxylic acid containing compound; and

passing the aqueous solution through the bed of the activated carbon composition such that there is a flow of an aqueous solution to be purified into the bed and a flow of purified aqueous solution from the bed.

Int. B1

24. The method of claim 23 wherein the pH of the aqueous solution to be purified differs less than ± 1 pH unit from the pH of the purified aqueous solution.

Int. A4

25. The activated carbon composition as claimed in claim 23 wherein the carboxylic acid containing compound is adsorbed onto the surface of the activated carbon and is present in an amount of from 0.01 to 5 percent by weight.

26. The activated carbon composition as claimed in claim 23 wherein the carboxylic acid containing compound is a hydroxy carboxylic acid.

27. The activated carbon composition as claimed in claim 26 wherein the hydroxy carboxylic acid is one or more selected from the group consisting of citric acid, ascorbic acid, erythorbic acid, glycolic acid, lactic acid, salicylic acid, hydroxybutyric acid, hydroxyvaleric acid, and their corresponding ammonium, sodium and potassium salts.

28. The activated carbon composition as claimed in claim 23 wherein the carboxylic acid containing compound is one or more carboxylic acid containing compounds useful as one or more selected from the group consisting of sequestering agents, buffers, base neutralizers, antioxidants, and reducing agents.

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